

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
24 October 2002 (24.10.2002)

PCT

(10) International Publication Number
WO 02/083325 A1

(51) International Patent Classification⁷: **B05C 17/01**

(21) International Application Number: **PCT/GB02/01683**

(22) International Filing Date: **10 April 2002 (10.04.2002)**

(25) Filing Language: **English**

(26) Publication Language: **English**

(30) Priority Data:
0108967.1 **10 April 2001 (10.04.2001)** **GB**

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(81) Designated States (national): **AE, AG, AL, AM, AT, AU,**
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG,
SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
VN, YU, ZA, ZM, ZW.

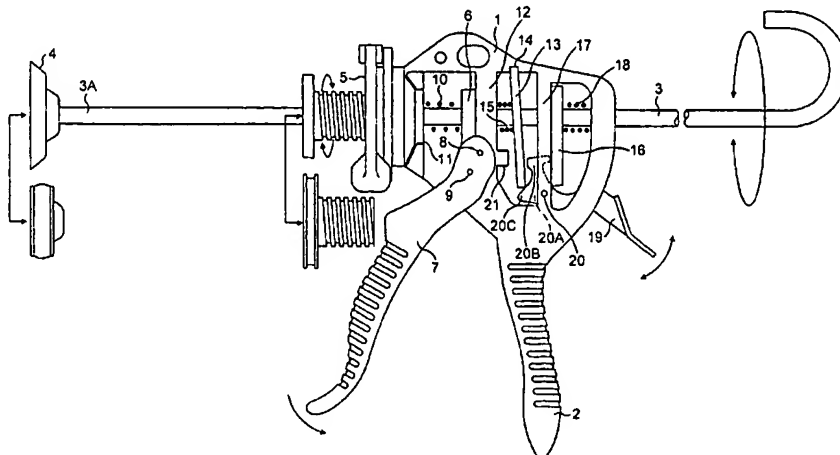
(84) Designated States (regional): **ARIPO** patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR,
GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), **OAPI** patent
(BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,
NE, SN, TD, TG).

Published:

— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **DISPENSING GUN**



(57) Abstract: A dispensing gun wherein forward and reverse incremental movement of the piston rod (3) can be affected rapidly and conveniently by the operative by simple operation of a corresponding manual actuating means (7, 19), release of the brake member (13) to permit forward and reverse movement of the piston rod (3) being achieved automatically without the need for intervention by the operator.

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Dispensing Gun

This invention concerns improvements in dispensing guns of the kind used for the dispensing of paste like materials such as mastics, sealants, adhesives or the like.

Known dispensing guns of this kind are disclosed in GB-A-2172059 and WO-99/37407.

It is an object of the present invention to provide a dispensing gun of the kind referred to wherein a piston rod can be optionally be driven in either a forward or rearward direction by corresponding actuating means, in order to enable material to be dispensed from or retracted into the gun or a cartridge attached thereto, whilst maintaining a simple construction of the gun and reducing the need for manual adjustment thereof to a minimum.

The invention accordingly provides a dispensing gun comprising a housing, a piston rod slidably mounted in said housing and having a forward end, one or more driving members slidably engaging said piston rod and coupled to manual actuating means for moving a said driving member in a forward or rearward direction respectively, the arrangement being such that in each case the driving member is initially tilted relatively to the longitudinal axis of the piston rod in order to grip the latter and is then moved to carry the piston rod therewith, return spring means being provided on the forward side of the forward moving driving member and on the rearward side of the rearward driving member for returning the driving member relatively to the piston rod upon release of the manual actuating means, and a brake member slidably engaged around said piston rod, linked to said housing at a point spaced from the axis of the piston rod and return spring loaded relatively to said piston rod in a reverse direction whereby upon forward movement of the piston rod the brake member can yield against the return spring to permit movement of the rod whilst restraining the latter against reverse movement relatively to the housing, the said manual actuating means for rearward movement of the piston rod being linked both to said rearward driving member and to said brake member in such a manner that rearward movement of said rearward driving member is accompanied by forward movement of said brake member to release the piston rod for rearward movement.

An arrangement in accordance with the invention has the advantage that forward and reverse incremental movement of the piston rod can be affected rapidly and conveniently by the operative by simple operation of a corresponding manual actuating means, such as an actuating

lever, release of the brake member to permit forward or reverse movement of the piston rod being achieved automatically without the need for intervention by the operator.

Further preferred features and advantages of the invention will become apparent from the following description taken in conjunction with the accompanying drawing, the single figure of which is a side elevation of a dispensing gun in accordance with one embodiment of the invention, with the side cover removed to show the internal mechanism.

Referring to the drawing, a dispensing gun comprises a housing 1 incorporating an integral hand grip 2 and carrying a piston rod 3 that is axially slidably mounted within the housing 1 and has a forward end 3A adapted for fitting to a plunger 4 for dispensing material from a cartridge (not shown) that is adapted for fitting to the forward end of the housing 1 by means of a clamp 5 in known manner.

The piston rod 3 is indexable in a forward direction by means of a forward driving member 6 that slidably engages the piston rod 3 by means of a corresponding bore, and is pivotally linked to an actuating lever 7 at a pivot point 8. The lever 7 is pivoted to the body of the housing 1 at 9. A compression spring 10 engages around the piston rod 3 between a partition 11 of the housing 1 and the forward driving member 6. Thus, in the idle position shown in the drawing, the forward driving member 6 is spring urged into engagement with a forward face of a partition 12 of the housing 1 so that the bore within the driving member 6 is in alignment with the piston rod 3 and the latter is freely slidable therein.

By gripping the actuating lever 7 with one hand and squeezing it towards the hand grip 2, an operator can transmit forward driving movement to the driving member 6 via the pivot 8. The driving member 6 is thus initially tilted about the axis of the piston rod 3 in order to grip the latter frictionally, and is then moved forwardly against the compression spring to carry the piston rod with it.

A brake member 13 is the form of a plate having a bore within which the piston rod 3 is slidably engaged. One end of the plate 13 is restrained within a recess 14 of the housing 1, and a compression spring 15 is located around the piston rod 3 between the partition 12 and the brake member 13 so as to urge the latter in a rearward direction relatively to the recess 14. The bore in the brake member 13 is thus caused to bind upon the surface of the piston rod 3 and restrain the latter against rearward movement. Upon release of the lever 7, the piston rod 3 is thus restrained

in a forward position as the driving member 6 returns into engagement with the partition 12. It will thus be seen that by repeated actuation of the lever 7 the piston rod 3 can be indexed in a forward direction, the braking member 13 yielding against the compression spring 15 to permit forward movement of the piston rod 3 but preventing rearward movement thereof.

A rearward driving member 16 is in the form of a plate having a bore slidably engaging around the piston rod 3 and forwardly spring urged into engagement with a rear surface of a further partition 17 of the housing 1, by means of a compression spring 18 engaging around the piston rod 3 between the rearward driving member 16 and the housing 1.

A further lever 19 extends in a plane parallel to that of the drawing, within a slot in the housing 1, and is pivoted relatively to the housing around a pivot 20 in the partition 17. The lever 19 extends from the pivot 20 to provide three cam surfaces 20A, 20B, and 20C. Upon movement of lever 19 in an anticlockwise direction as viewed in the drawing, the cam surface 20B engages the brake member 13 to move the latter in a forward direction against the compression spring 15 and thus to release the piston rod 3, for example to enable manual movement thereof. Upon movement of lever 19 in a clockwise direction about the pivot 20, the cam surface 20C firstly engages the brake member 13 in order to move it in a forward direction and release the piston rod 3, and the cam surface 20A then abuts against the rearward driving member 16 in order to tilt the latter about the axis of the piston rod 3 and grip the same for rearward movement of the driving member 16 and the piston rod 3 against the force of the compression spring 18. The cam surface 20C is shaped to make sliding engagement with the brake member 13 and hold the latter in the released position as the cam surface 20A carries the driving member 16 in the rearward direction. An abutment 21 extends from the partition 12 in order to act as an end stop for arresting movement of the braking member 13 in a position in which it extends perpendicularly to the piston rod 3.

It will thus be seen that an arrangement in accordance with the embodiment of the invention described above has the considerably advantage of enabling one handed operation of the dispensing gun to affect both forward and rearward indexing movement of the piston rod 3 and plunger 4. Forward movement is effected by squeezing the lever 7 relatively to the hand grip 2, and rearward movement is effected by depressing the lever 19 by means of the thumb, whilst holding the device by way of the hand grip 2 and the lever 7.

CLAIMS:

1. A dispensing gun comprising a housing (1), a piston rod (3) slidably mounted in said housing (1) and having a forward end (3A), one or more driving members (6,16) slidably engaging said piston rod (3) and coupled to manual actuating means (7,19) for moving a said driving member (6,16) in a forward or rearward direction respectively, the arrangement being such that in each case the driving member (6,16) is initially tilted relatively to the longitudinal axis of the piston rod (3) in order to grip the latter and is then moved to carry the piston rod (3) therewith, return spring means (10,18) being provided on the forward side of the forward moving driving member (6) and on the rearward side of the rearward driving member (16) for returning the driving member (6,16) relatively to the piston rod (3) upon release of the manual actuating means (7,19) and a brake member (13) slidably engaged around said piston rod (3), linked to said housing (1) at a point spaced from the axis of the piston rod (3) and return spring (15) loaded relatively to said piston rod (3) in a reverse direction whereby upon forward movement of the piston rod (3) the brake member (13) can yield against the return spring (15) to permit movement of the rod (3) whilst restraining the latter against reverse movement relatively to the housing (1), the said manual actuating means (19) for rearward movement of the piston rod (3) being linked both to said rearward driving member (16) and to said brake member (13) in such a manner that rearward movement of said rearward driving member (16) is

accompanied by forward movement of said brake member (13) to release the piston rod (3) for rearward movement.

2. A dispensing gun as claimed in Claim 1, wherein the actuating means (7,19) comprise a lever.

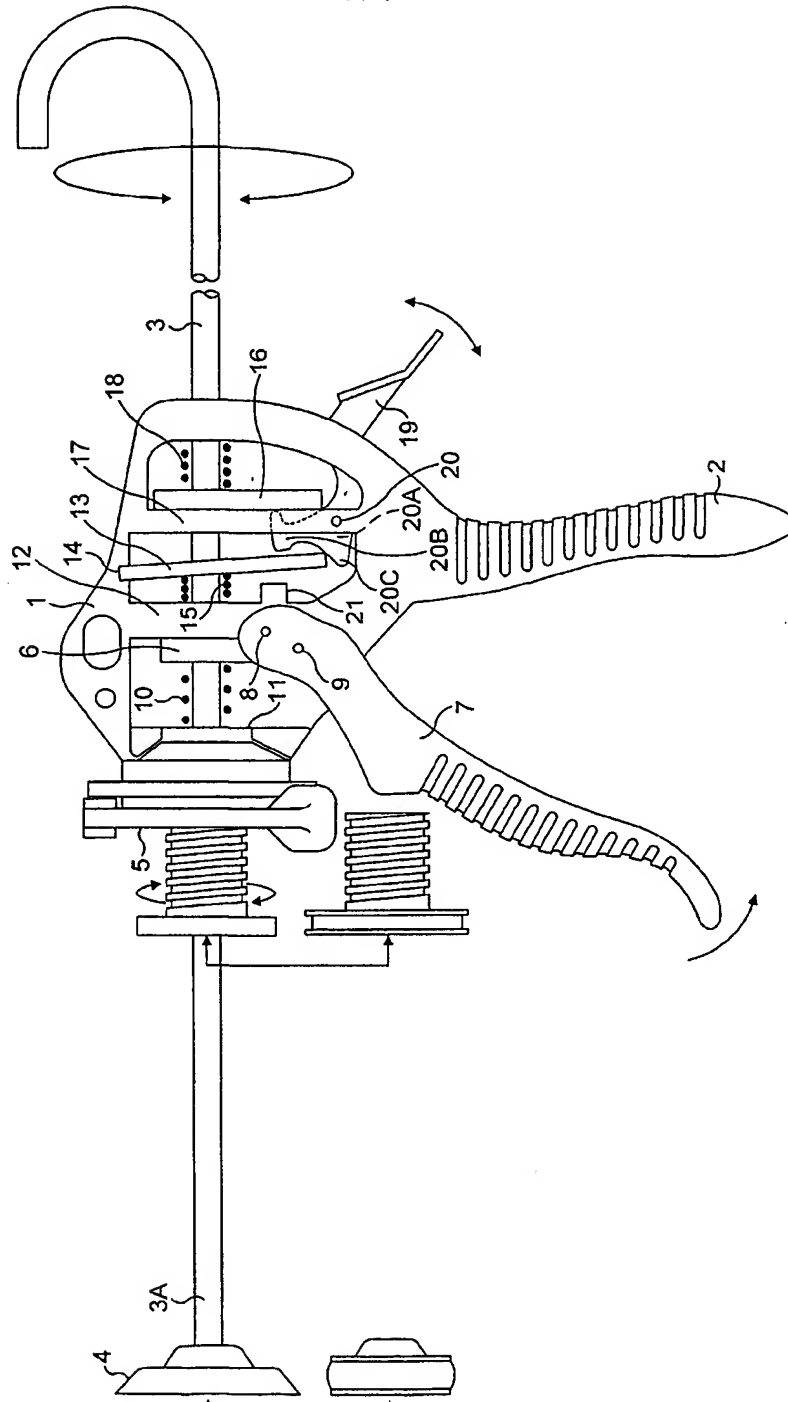
3. A dispensing gun as claimed in Claim 1 or 2, wherein the brake member (13) comprises a plate with a bore.

4. A dispensing gun as claimed in Claim 3, wherein one end of the plate of brake member (13) is restrained within a recess (14) of the housing (1).

5. A dispensing gun as claimed in any preceding claim, wherein the actuating means (19) for rearward movement of the piston rod (3) is pivotable relative to the housing (1) to provide three cam surfaces (20A, 20B and 20C).

6. A dispensing gun substantially as described herein with reference to the accompanying drawing.

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SUBSTITUTE SHEET (RULE 26)

INTERNATIONAL SEARCH REPORT

PCT/GB 02/01683

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B05C17/01

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B05C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2 732 102 A (EKINS) 24 January 1956 (1956-01-24) column 6, line 44 - line 73; figures 4,5,10,11 -----	1-4,6

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

9 July 2002

Date of mailing of the international search report

18/07/2002

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PCT/GB 02/01683

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2732102	A	24-01-1956	NONE